Zambia Institute of Banking & Financial Services

BANKING AND FINANCE DIPLOMA

BF 260: STATISTICAL ANALYSIS

13TH OCTOBER, 2022 09:00HRS - 12:00HRS

TIME ALLOWED: 3Hours + 15minutes Reading Time

INSTRUCTIONS TO CANDIDATES

1. Answer ALL 50 questions.
2. Each question carries Two (2) marks.
3. Statistical Tables are attached at the end of the question paper.
4. FULL CREDIT will only be given to clearly shown work given to arrive at the correct FINAL answer.

DO NOT TURN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO.

1.0 What is the median of the following set of scores?28, 16, 22, 20, 24.

A. 20
B. 24
C. 22
D. 28

2.0 Approximately what percentage of scores fall within two standard deviation of the mean in a normal distribution?

A. 68%
B. 95%
C. 99%
D. 34%

3.0 A graph that uses vertical bars to represent data is called a --------

A. Bar graph
B. Line graph
C. Scatter plot
D. Vertical graph

4.0 The graph of ----------is to focus on summarizing and explaining a specific set data

A. Inferential statistics
B. Descriptive statistics
C. Quantitative statistics
D. None of the above

5.0 Which of the following is not a measure of variability?

A. Variance
B. Median
C. Range
D. Standard deviation

6.0 Which is a raw score that has been transformed into standard deviation units?

A. z – score
B. SDU Score
C. t – Score
D. e - Score

7.0 The average monthly production of a factory for the first 10 months is 3 500 units, and for the next 5 months was 1 500 units. The average monthly production of the year will be

A. 2 833.33 units
B. 5 233.33 units
C. 4 333,33 units
D. 3 021.33 units

8.0 The weight of the earth is ----------

A. Difficult to tell
B. Discrete variable
C. Qualitative variable
D. Quantitative variable

9.0 A contractor employs 30 males, 20 females and 10 children in his factory. Male wages are K15 per day, female K13 per day, and children K8 per day. The weight wages paid per day will be

A. 14
B. 12.5
C. 13.17
D. 13.71

10.0 The data which has already been collected by someone is called

A. Secondary
B. Primary
C. Array
D. Quantitative

11.0 Which of the measures given here are based on every item of the data (uses all observations)

A. Range
B. Quartile deviation
C. Standard deviation
D. Mode

12.0 In a week the prices of a bag of rice were 450, 380, 440, 390, 420, 410, 400. The range is

A. 60
B. 90
C. 70
D. 100

13.0 When all the values in a series occur the same number of times, then one must not compute the

A. Mean
B. Median
C. Mode
D. Weighted mean

14.0 A statistic which is not measurable is called

A. A constant
B. An attribute
C. A variable
D. A parameter

15.0 The number 156.9600 rounded to the nearest tenth (one decimal place) is

A. 156.9
B. 156.0
C. 177.0
D. 157

16.0 A frequency of weekly wages for a group of employees is given below

Weekly wages	Frequency
50.00 – 75.00	15
75.00 – 100.00	20
100.00 – 125.00	65
125.00 – 150.00	45
150.00 – 175.00	15

The mean for this group is

A. K133.98

B. K112.50

C. K162.50

D. K156.25

17.0 A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. Find the probability that a blue ball is drawn

A. $\frac{3}{4}$

B. $\frac{5}{8}$

C. $\frac{1}{2}$

D. $\frac{3}{8}$

18.0 The probability of getting from the word CHARACTER is

A. $\frac{7}{9}$

B. $\frac{1}{3}$

C. $\frac{5}{9}$

D. $\frac{1}{2}$

19.0 A ticket is drawn at random from a bag containing tickets numbered from 1 to 50. The probability that the select ticket has a number which is a multiple of 6.

A. $\frac{21}{25}$

B. $\frac{4}{25}$

C. $\frac{1}{2}$

D. $\frac{14}{25}$

20.0 Which of the following cannot be the probability of an event?

A. 1.3

B. $\frac{2}{7}$

C. 65%

D. 0.4

21.0 The probability of selecting a rotten mango randomly from a heap of 900 mangoes is 0.15. what is the number of rotten mangoes in the heap?

A. 153
B. 150
C. 135
D. 165

22.0 For a normal distribution, which of the following is true?

A. Mean $\neq$ median $=$ mode
B. Mean $=$ median $=$ mode
C. Mean $=$ median $\neq$ mode
D. Mean $\neq$ median $\neq$ mode

23.0 If the mean of a Poisson distribution is 16 then its variance is equal to

A. 4
B. 16
C. 5
D. 25

24.0 If X is a random variable with $P(x = 0) = 0.8=$, then the variance of X is

A. $\ln\left(\frac{5}{4}\right)$
B. $\log 20$
C. 0
D. $\ln 20$

25.0 Which of the following is biased estimator?

A. $\hat{P} = \frac{X}{n}$
B. $\overline{X} = \frac{\sum x}{n}$
C. $S^2 = \frac{\sum(X-\overline{X})^2}{n-1}$
D. $S^2 = \frac{\sum(X-\overline{X})^2}{n}$

26.0 In a random sample of 2000 students, $\hat{P} = 0.90\ (90\%)$ were in favour of longer hours at the school library. The standard error of $\hat{P}$ (the sample proportion) is

A. 0.0067
B. 0.9000
C. 0.0900
D. 0.0270

27.0 For a random sample of 25 women, the average resting pulse rate is $\overline{x} = 77$beats per minute, and the sample standard deviation is $S = 8$. The standard error of the sample is
A. 2.828
B. 1.600
C. 0.320
D. 2.560

28.0 Null and alternative hypothesis are statements about
A. Population parameter
B. Sample proportion
C. Sample statistics
D. None of the above

29.0 If the $Z-$ score of normal distribution is 2.5, the mean of the distribution is 45 and the standard deviation of normal distribution is 3 then the value of X for a normal distribution is
A. 52.5
B. 37.5
C. 97.5
D. 67.5

30.0 A random sample of $n = 500$ measurements is drawn from a binomial population with probability of success 0.09. give the mean and the standard deviation of the sampling distribution of the sample proportion $\widehat{P}$
A. 0.0, 0.013
B. 0.91, 0.02
C. 0.09, 0.02
D. 0.91, 0.013

31.0 A random sample of 250 students at a university finds that these students take a mean of 16.5 credit hours per quarter with a

standard deviation of 1.5 credit hours. Estimate the mean credit hours taken by a student each quarter using 95% confidence interval. Round to the nearest thousandth.

A. 16.5 ± 0.10
B. 16.5 ± 0.158
C. 16.5 ± 0.186
D. 16.5 ± 0.014

32.0 The director of a hospital wishes to estimate the mean number of people who are admitted to the emergency room during a 24 – hour period. The director randomly selects 64 different 24 – hour periods and determines the number of admissions for each of this sample, $\overline{x} = 19.8$ and it is known that $\sigma^2 = 4$. If the director wishes to estimate the mean number of admissions per 24 – hour period to within 1 admission with 90% reliability, what is the minimum sample size she should use?

A. 8
B. 45
C. 28
D. 11

33.0 The coefficient of correlation is used to determine

A. A specific value of x given a specific value of y.
B. A specific value of y given a specific value of x .
C. The strength of and direction of the relationship between x and y .
D. None of the above

34.0 A regression analysis between sales (in K 1000) and price (in Kwachas) resulted in the following equation

$$\hat{y} = 60\,000 - 5x$$

The above equation implies that an

A. Increase of K1 in price is associated with a decrease of K5 in sales.
B. Increase of K1 in price is associated with a increase of K5 000 in sales.
C. Increase of K1 in price is associated with a decrease of K5 000 in sales.

D. Increase of K1 in price is associated with a decrease of K5 000 in sales.

35.0 In a regression and correlation analysis if $r^2 = 1$, then

A. $SSE = 1$
B. $SSE = SST$
C. $SSR = SST$
D. $SSR = SSE$

36.0 An orderly set of data arranged in accordance with their time of occurrence is called

A. Geometric Series
B. Arithmetic Series
C. Harmonic Series
D. Time Series

37.0 Damages due floods, droughts, strikes, fires and political disturbances are:

A. Trend
B. Seasonal
C. Cyclical
D. Irregular

38.0 In Paasche's price index number weight is considered as

A. Quantity in base year
B. Quantity in current year
C. Prices in base year
D. Prices in current year

39.0 Laspeyres index $= 130$, Paasche's index $= 128$, then Fisher's index is equal to

A. 100
B. 128
C. 129
D. 130

40.0 When the price of an item is divided by the price of the preceding year, we get:

A. Value index
B. Link relations
C. Simple relative
D. None of them

41.0 ANOVA was used to test the outcomes of three drug treatments. Each drug was given to 30 individuals. The MSE for this analysis was 25. What is the standard deviation for all 90 individuals sampled for this study?

A. 5
B. 9.49
C. 90
D. None of the above

42.0 In an analysis of variance problem if $SST = 180$ and $SSTR = 70$, then SSE is

A. 250
B. 80
C. 70
D. 180

Consider the following scenario, we are setting up a pharmaceutical factory and our state of nature indicates that if we built a small facility the return during the same whether the demand is low or high, the medium facility indicates a constant return on moderate and high. If we build a large facility chances are that the return would only be good if we have a high demand or return

	Possible future demands			
Alternatives		Low	Moderate	High
	Small facility	K15M	K15M	K15M
	Medium	K10M	K13M	K17M
	Large	K6M	K7M	K20M

Answer questions 43 to 46.

43.0 Determine which alternative action the operations manager chooses using Maximin
A. Small facility
B. Medium
C. Large
D. None of the above

44.0 Determine which alternative action the operations manager chooses using Maximax
A. Small facility
B. Medium
C. Large
D. None of the above

45.0 Determine which alternative action the operations manager chooses using Minimax regret criteria
A. Small facility
B. Medium
C. Large
D. None of the above

46.0 Determine which alternative action the operations manager chooses using Laplace criteria
A. Small facility
B. Medium
C. Large
D. None of the above

47.0 The average number of errors on a page of a certain magazine is 0.2. What is the probability that the next page (or a randomly selected page) you read contains 2 or more errors?
A. 0.9824
B. 0.0176
C. 0.8187
D. 0.1637

48.0 The waiting time (in minutes) for a train is uniform (10,50). Find the probability that you have to wait at least 20 minutes.

A. 0.25
B. 0.20
C. 0.75
D. 0.50

49.0 Average time requires to repair a machine is 0.5 hours. What is the probability that the next repair will take more than 2 hours?

A. 0.0183
B. 0.0813
C. 0.0318
D. 0.8130

50.0 The number of viewers of a TV show per week has a mean of 29 million with a standard deviation of 5 million. Assume that, the number of viewers of that show follows a normal distribution. What is the probability that, next week's show will have between 28 and 32 million viewers?

A. 0.0793
B. 0.1464
C. 0.2257
D. 0.3050

END OF EXAMINATION